

REMARKS

Claims 1-70 are pending in the subject application. In the present Office Action, claims 1-70 stand rejected under 35 U.S.C. § 103(a) as being anticipated by U.S. Published Application No. 2005/0015936 by Eckert et al. ("Eckert") in view of Crystallization in Kirk-Othmer Encyclopedia of Chemical Technology, copyright 2001 by John Wiley & Sons, Inc. ("Othmer"). Applicants respectfully traverse the rejection of claims 1-70 as set forth herein.

Applicants present herewith a Declaration under 37 C.F.R. § 1.131 by Professor John A. Gladysz, swearing behind the earliest priority date of Eckert. Claims 4 and 25 have been amended to include the elements of claims 5 and 26, respectively. Claims 5 and 26 have been canceled. New claims 71 and 72 have been added to further describe claims 1 and 45, respectively. Specifically, claims 71 and 72 described the element "wherein the chemical reaction is conducted in the absence of pressurized carbon dioxide." No new matter is added by these amendments.

Eckert

Eckert describes a method for solubilizing and recovering fluorinated compounds. The Eckert method comprises applying carbon dioxide gas to the solvent at a pressure effective to enhance the solubility of the fluorinated compound and then recrystallizing the fluorinated compound by reducing the pressure of the carbon dioxide gas (see, Eckert, claim 1). The Eckert method forms "a CO₂-expanded solvent, [which] results in enhanced solubility of the fluorinated compound in the solvent" and then may recrystallize the fluorinated compound "by reducing the pressure of the carbon dioxide gas" (Eckert, page 3, paragraph [0023]).

The Examiner notes that Eckert discloses the use of a fluorous support or polymer to help trap the catalyst upon release of the CO₂ pressure (Office Action, page 4). However, while the Eckert publication may describe using a fluorinated support material to reversibly bind or adsorb the compound (Eckert, page 6, paragraph [0069]), this embodiment is not disclosed in the provisional application which establishes Eckert's priority date. The provisional application only briefly describes the use of a polymeric compound having fluorinated group "to capture and precipitate the catalyst"

(see, the Eckert provisional application at page 11, lines 9-14). In the provisional application, fluorinated polymers are used as a vehicle for catalyst removal/isolation from the system. The Eckert provisional application does not describe, suggest, or make obvious the reversible binding of the fluororous compound to a solid adsorbant containing a fluororous domain or a system where a fluororous compound is initially absorbed on the solid adsorbant. Therefore, these embodiments described by Eckert in the PCT application should be given a corrected priority date of May 30, 2002 from the filing of the PCT application (PCT/US02/17110).

Declaration of John A. Gladysz under 37 C.F.R. § 1.131

Applicants submit a Declaration under 37 C.F.R. § 1.131 by Professor John A. Gladysz which establishes that the subject matter described in the claims of the subject application was conceived of and reduced to practice, prior to the earliest priority date of May 30, 2001 of the Eckert reference. Accompanying the Declaration is the following evidence of earlier conception/reduction to practice: a) a copy of an article submitted to *The Journal of the American Chemical Society* describing the claimed invention which was submitted June 11, 2001 (received June 12, 2001) and describes research performed prior to the May 30, 2001 Eckert priority date; b) laboratory notebook pages from co-inventor Marc Wende describing experiments reducing the claimed invention to practice which were performed prior to the May 30, 2001 Eckert priority date; and c) a copy of a group meeting schedule showing that co-inventor Wende presented his research on March 21, 2001 in which experiments for reducing the claimed invention to practice were discussed. This evidence and the sworn Declaration of Professor John A. Gladysz clearly establishes that the claimed invention was conceived of and reduced to practice prior to the earliest Eckert priority date.

Further, as discussed above, since the Eckert priority document (i.e., the provisional application) does not describe using the solid adsorbant where the fluororous compound is initially absorbed on the solid adsorbant containing the fluororous domain, the correct priority date for Eckert description of this embodiment is May 30, 2002. This corrected priority date is well after the date of reduction to practice by Gladysz et al. as established by the Declaration. In view of this evidence, Applicants respectfully submit

that Eckert cannot be used as prior art to establish obviousness over the pending claims of the subject application.

New Claims 71 and 72

In addition to the Declaration, Applicants have added new claims 71 and 72 to further differentiate claims 1 and 45 from the Eckert process. Applicants submit these new claims are added to speed prosecution of the subject application and addition of these claims should not be considered an admission that Eckert is prior art to the subject application nor that Eckert (alone or in combination) renders the claimed invention obvious. Indeed, in view of the Declaration, Applicants have established that Eckert is not prior art to the subject application.

New claims 71 and 72 add the element "wherein the chemical reaction is conducted in the absence of pressurized carbon dioxide" to the inventions described in claims 1 and 45, respectively. The methods of these claims provide a benefit over the Eckert process in that high pressurize carbon dioxide or other gas is not required in the process. The Eckert process requires carbon dioxide at pressures ranging from 30 to 300 bar (see Eckert, page 4, paragraph [0037]). These high pressures require specialized equipment, such as steel pressure vessels, which are relatively costly and more hazardous compared to the methods described in the subject application.

In contrast, the methods described claims 71 and 72 of the subject application are conducted in the absence of pressurized carbon dioxide and would therefore not require the high pressure reaction vessels. In addition, the specification of the subject application specifically states

"an advantage of the present invention is the catalytic and stoichiometric reactions and separations related to the fluorine catalysts and reagents may be carried out within the range of reaction and system conditions and parameters e.g. temperature, pressure, and the like, typically used for the corresponding non-fluorine (parent) catalyst or reagent" (page 5, paragraph [0042] of published application, emphasis added)

Thus, the claimed methods can more clearly mimic the protocols developed for the non-fluorine equivalent reactions, thereby reducing experimental optimization time. In contrast, Eckert always requires high pressure CO₂, which will necessarily require

reworking of the reaction protocols. Thus, the methods of claims 71 and 72 present clear advantages over the Eckert process.

Omission of an element with the retention of the element's function is an indicia of unobviousness (MPEP § 2144.04(II)(B)). The subject application claims a "method for conducting a chemical reaction in a non-fluorous medium ... wherein the chemical reaction is conducted in the absence of pressurized carbon dioxide." Nothing in Eckert would lead one having ordinary skill in the art to believe that the methods described therein could be performed in the absence of a high pressure gas, such as carbon dioxide.

Independent claims 22 and 58 contain the element "wherein the fluorous compound is initially absorbed on the solid adsorbant containing the fluorous domain." As discussed above, the Eckert priority document does not describe this element and the Gladysz Declaration clearly establishes prior conception of this element.

The Othmer reference is cited to establish that crystallization may be used for separation and may involve temperature-dependent solubility (Office action, page 4). However, Othmer does not disclose chemical reactions in a non-fluorous medium, wherein the chemical reaction is conducted in the absence of a fluorous solvent and the absence of pressurized carbon dioxide. Nor does the Othmer reference discuss use of a solid adsorbant onto which the fluorous compound may be adsorbed. In the subject application, the fluorous compound is adsorbed (physically partitioned, chemically partitioned, deposited, oiled-out, precipitated onto or dissolved) into the adsorbant. There is no requirement of recrystallization, as described by Othmer.

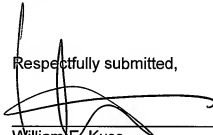
Applicants have established that the cited references do not disclose or make obvious a method for conducting a chemical reaction in a non-fluorous medium, wherein the chemical reaction is conducted in the absence of pressurized carbon dioxide. In addition, Applicants have established conception and reduction to practice prior to the Eckert priority date. Consequently, the claimed process is novel and non-obvious over Eckert, either alone or in combination with Othmer. Applicants respectfully request that the rejection under 35 U.S.C. § 103(a) be withdrawn.

CONCLUSION

Applicants submit that claims 1-4, 6-25, and 27-72 of the subject application recite novel and non-obvious methods of conducting a chemical reaction in a non-fluorous medium using a fluorous compound in the presence of a solid adsorbant containing a fluorous domain. Applicants have established conception and reduction of practice of the claimed methods prior to the earliest priority date of Eckert et al. In view of the Declaration, Amendments and Remarks submitted herein, Applicants respectfully submit that all pending claims in the subject application are in condition for allowance. Accordingly, reconsideration of the rejection and issuance of a Notice of Allowance is earnestly solicited.

If the undersigned can be of assistance to the Examiner in addressing issues to advance the application to allowance, please contact the undersigned at the number set forth below.

Respectfully submitted,



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